

ABSTRACT

The present invention provides for a metallic surface identifying sensor including:
a magnetic pole portion for detection which shifts facing a surface of a magnetic body to be identified having an uneven shape wherein the distance from the surface to be identified changes along with the uneven shape while shifting; a reference magnetic pole portion which is placed across from a reference surface, wherein the distance from the reference surface to the magnetic pole portion is maintained approximately constant regardless of the shifting of the magnetic pole portion for detection in relation with the surface to be identified; magnetizing coils which are separately wound around the magnetic pole portion for detection and the reference magnetic pole portion to generate magnetic fluxes; and detecting coils which are separately wound around the magnetic pole portion for detection and the reference magnetic pole portion to detect the magnetic fluxes wherein the uneven shape of the surface to be identified of the metallic body is detected based on detection outputs from the magnetic pole portion. The present invention also provides for a differential magnetism sensor apparatus, a coin identifying apparatus, a magnetic sensor body, a coin identifying sensor, a displacement sensor and a proximity sensor.